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A.2

BLACK & VEATCH SPECIAL PROJECTS CORP.

MEMORANDUM

USEPA Region 5
American Chemical Services
Changes to Revision 4 ACS Mini-QAPP

BVSPC Project 71670
BVSPC File D.1
September 5, 1997

To: Sheri Bianchin, USEPA

From: Steve Mrkvicka, BVSPC

Enclosed are the revised pages to the ACS Mini-QAPP regarding the upcoming sediment sampling during the week of September 8, 1997. The pages were revised to incorporate changes to the following items:

- Section A.6, Sediment Sampling Procedures, pages Amend1-11 and Amend1-12. The text was changed to state that a bucket auger will be used to collect sediment samples when the material is inundated with water.
- Table 1-1, page 1-5. Quality Assurance/Quality Control samples for sediment and soil were changed to indicate that field rinsate blanks and trip blanks will not be collected. I have enclosed a copy of Table 1-1 from the *Region 5 Superfund Model Quality Assurance Project Plan (revision 1, May 1996)*, which indicates that field rinsate blanks or trip blanks are not required for surface soil matrix (which also applies to sediment samples.) This morning I spoke to John Morris, USEPA Region 5 Central Regional Laboratory, who said that we do not need to include field rinsate blanks or trip blanks. Other pages in the text were also amended to reflect this change.

- Place pressure transducer from data logger below water surface to a depth sufficient to allow a reasonable change in head and to allow water to return to a static level.
- Create head differential while simultaneously starting data logger.
- Discontinue test once the change in water column height is less than 0.01 feet for a minimum of three consecutive readings. Label and save printer paper.
- Press stop button and reset.
- Remove equipment from well.
- Decontaminate equipment according to procedures outlined in Section A.9.

Additional slug test information can be found in the manufacturer's information that accompanies slug test equipment.

Manual slug tests can be performed in two ways:

- Fill monitoring well to top of casing with water from a potable source. Monitor decrease in water level for 30 minutes or until measurable decreases in water level cease.
- Remove up to three casing volumes of water from monitoring well and monitor water level recovery for 30 minutes or until measurable increases in water level cease.

Hydraulic parameters are calculated using slug test data. Hydraulic conductivity is calculated using the Hvorslev method and transmissivities and storativities are determined using the Cooper curve matching method.

A.6 Sediment Sampling Procedures

Sediment sample locations will be selected as directed by the Remedial Project Manager based on project need. In areas where the sediments are inundated by water, sediment samples will be collected using a mud auger, bucket auger, or ponar dredge depending on water depth and accessibility. In areas where the sediments are not covered by standing water, sediment samples will be collected using a stainless steel spade to collect sediment from designated locations within sediment deposit areas. When sediment samples will be collected for VOC analysis, sediment from each sample location will be divided into three portions. The first portion will be placed immediately in a 4-ounce glass jar and sealed. The second portion will be placed in a plastic cup and covered with aluminum foil. The third portion will be

placed in a stainless steel mixing bowl. The portion for VOC analysis will not be placed in a stainless steel mixing bowl.

When sediment samples will be collected for VOC analysis, a visual inspection and head space analysis will be conducted on the sample portion placed in the plastic cup. The headspace analysis will be performed by pushing a PID probe through the aluminum foil and recording the highest instrument reading. The PID readings will all be taken in a consistent manner leaving the sample in the jar approximately one to two minutes before taking the readings. The first 4-ounce glass jar filled will be used for VOC analysis.

The third portion that is placed in the stainless mixing bowl will be thoroughly mixed to obtain one composite sample. The composite samples will be transferred to the appropriate sample containers for non-VOC analyses, which may include semivolatile organic compounds, pesticide/polychlorinated biphenyls, metals, and cyanide.

A.7 Surface Water Sampling Procedures

Surface water sample locations will be selected as directed by the Remedial Project Manager based on project need. The following suggestions will increase the probability that the samples obtained are representative of site conditions.

- The most representative samples of a well-mixed stream are obtained from mid-channel at 0.6 of the stream depth.
- Stagnated areas in a stream or river can have zones of varying pollutant concentrations, depending upon the physical/chemical properties of the contaminants and proximity of these stagnated areas to the source.
- When sampling in running water, move from downstream to upstream to eliminate sediment loading in subsequent samples.
- To aid sampling a standing body of water, the surface area may be divided into grids. A series of samples taken from each grid can be combined into one sample, or several grids may be selected for sampling at random.
- Avoid agitating the water during transfer from source to bottle, so as to prevent the loss of volatile constituents.
- When slowly filling 40 ml septum vials for volatile organics analysis, exclude any air space in the vial and be sure the Teflon liner faces in when closing. After sealing, turn vial upside down and shake to check for

Table 1-1
Sample Types and Estimated Sample Numbers
American Chemical Services, Inc. Site

Matrix	Investigative Samples	Quality Assurance/Quality Control Samples				Total Samples	Test Parameters[e]
		Field Duplicates[a]	Field Blanks[b]	Matrix Spk/Dup[c]	Trip Blanks[d]		
Groundwater	4	1	1	1	1	8	Low Concentration[f] TCL, TAL
Surface Water	4	1	1	1	1	8	TCL, TAL
Sediment	4	1	--	1	--	6	TCL, TAL
Soil (surface and subsurface)	4	1	--	1	--	6	TCL, TAL

a Field duplicates will be collected at a rate of 1 per 10 investigative samples.

b A field blank will be collected for each sampling event at a rate of 1 per 10 investigative samples. If equipment, either disposable or re-usable, is used to collect a groundwater or surface water investigative sample, the field blank will consist of a rinsate blank, which is prepared by pouring deionized water through or over decontaminated sampling equipment and collecting the rinsate in sample containers. If sampling equipment is not used (as in the case of residential well sampling), the field blank will consist of pouring deionized water directly into sample containers in the field at the time when the investigative sample is collected.

c Matrix spike/matrix spike duplicates (MS/MSD) will be collected at a rate of 1 per 20 investigative samples. Groundwater MS/MSDs require triple volume for the designated sample; however, soil and sediment MS/MSDs do not require extra volume.

d One trip blank will be included in each shipment containing aqueous investigative or QA/QC samples (including field and/or rinsate blanks) that will be analyzed for volatile organic compounds.

e See Appendix A for USEPA TCL/TAL.

f Groundwater samples will be analyzed as Low Concentration samples.

3.0 Quality Assurance Objectives for Analytical Data

The overall quality assurance objective is to ensure that the oversight data are of known and acceptable quality. They must be sufficiently precise and accurate to be used in a comparison with the data generated by the PRPs. This oversight sampling program will serve as an external quality assurance measure to check the sampling and analytical procedures of the PRP and their laboratory.

To achieve the overall data quality objectives, proper sample handling and analysis and data handling procedures will be followed. These procedures are described in the following sections of this QAPP and are in accordance with the requirements and recommendations of the *CLP Statement of Work for Organics (OLM.03.1 or most current)* and *CLP Statement of Work for Inorganics (ILM.03.0 or most current)*. This document describes the specific objectives for analytical precision, accuracy and completeness. The specific objectives for analytical precision, accuracy and completeness follow the requirements presented in *CLP Statement of Work for Organics (OLM.03.1 or most current)* and *CLP Statement of Work for Inorganics (ILM.03.0 or most current)*.

To assess whether the overall quality assurance objectives have been met, analyses of specific field quality control samples will be required. These quality control samples include field blanks and field duplicates. The preparation of each of these types of samples is described in Section 4.0. The frequency with which they will be collected is given in Table 4-1.

Field blanks will monitor contamination during all phases of groundwater sample collection, handling storage, and analysis. They are distinct from method or laboratory blanks that do not monitor contamination introduced in the field during sample collection and handling. Field blank samples are collected at a frequency of one per group of ten or fewer investigative samples per sample matrix.

Trip blanks will be analyzed for volatile organic compounds in water samples. They will monitor volatile organic compound migration during sample shipment and storage. The trip blank sample is collected at a frequency of one per shipping cooler of VOC aqueous samples.

Field duplicate results will be used to assess the precision of the sample results. They will be used to monitor overall precision, including the reproducibility of sampling and analytical procedures, as distinct from the precision of analyses of

4.0 Sampling Procedures

Sampling procedures to be used by the PRP contractor are described in the approved groundwater sampling SOPs dated March 1996. BVSPC will be onsite overseeing the Montgomery Watson sampling activities. At co-located sampling locations where an oversight sample is required, BVSPC will either hand Montgomery Watson the necessary sample containers for the oversight sample or hold the sample containers. Montgomery Watson will fill the PRP's sample containers and the oversight sample containers. BVSPC will not handle the sampling equipment during the sampling procedure. An example of this procedure for groundwater sampling of a monitoring well would require Montgomery Watson to purge the well and fill the co-located sample containers while BVSPC holds the containers. These co-located sampling procedures would be followed for the sampling of other media (i.e., surface water, sediment, soil, etc.) Any field measurements required will be taken by Mongomery Watson and recorded by BVSPC in a field notebook for the oversight program at the time of sampling.

The bottles used for this sampling effort will be prepared using procedures specified in "Specifications and Guidance for Contaminant-Free Sampling Containers, December 1992", or most current.

Table 1-1 outlines the numbers of oversight samples to be collected and the number of quality control samples to be submitted for analysis.

Field quality control samples will consist of field replicates, field blanks and trip blanks. One field replicate of the oversight samples will be collected per sample matrix.

One field blank (see Table 1-1) prepared by either Montgomery Watson or BVSPC will be collected for each sampling event as an oversight sample by BVSPC. If equipment, either disposable or re-usable, is used to collect a groundwater or surface water investigative sample, the field blank will consist of a rinsate blank, which is prepared by pouring deionized water through or over decontaminated sampling equipment and collecting the rinsate in sample containers. If sampling equipment is not used (as in the case of residential well sampling), the field blank will consist of pouring deionized water directly into sample containers in the field at the time when the investigative sample is collected. The field blank will be analyzed for the sample parameters as the investigative samples collected with that equipment or during that sampling event.

Each oversight sample cooler with water samples shipped to the laboratory for VOC analysis will contain a trip blank to be analyzed for VOCs. Each trip blank will consist of two 40 ml glass vials with Teflon lined septa caps filled with organic-free deionized water. The trip blank vials should travel to and from the field without being opened.

For one investigative oversight groundwater sample, three times the normal sample volume for VOC will be collected. The extra volumes will be used by the laboratory for matrix spike/matrix spike duplicate (MS/MSD) analyses. The additional sample containers will be labeled with the sample number followed by MS or MSD to identify to the laboratory which sample containers should be used for the MS and MSD analyses. The investigative oversight sediment and surface soil samples will not require extra volume for MS/MSD analyses. One of the sediment and surface soil sample will be labeled MS/MSD for their MS/MSD analyses.

Table 4-1 contains directions on the types and quantities of sample containers required for each analysis, the proper sample preservation techniques, and holding times.

Sample packaging and shipment will be performed according to the USEPA requirements as described in Appendix D of the USEPA Region V CRL SARA/Superfund Sample Handling Manual, December 1987, or most recent. Each sample container will be enclosed in a clear plastic bag and placed in a cooler packaged with non-combustible, absorbent packaging material. Coolers must contain enough ice to maintain sample temperatures at $\leq 4^{\circ}C$. Each cooler must be sealed with custody type in such a manner that the tape would be broken if the cooler were opened. Waterproof tape must cover the custody tape. Coolers will be shipped by overnight carrier.

TABLE 1-1

SUMMARY TABLE OF SAMPLING AND ANALYSIS PROGRAM

Date: _____

Page: 1 of 1

SAMPLE MATRIX	FIELD PARAMETERS	LABORATORY PARAMETERS	Sample No.	Field Duplicate	Field Blanks	MS/MSD[1,2]	Matrix[4]
Groundwater	pH, temperature Specific conductance	CLP TCL volatile organics	25	1	1	1	31
Phase I, Round 1		CLP extractables	25	3	1	2	31
	Organic vapor screening with HNu Slug Test	CLP TCL pesticides/PCBs	25	3	1	2	31
		CLP TAL Metals (filtered)	25	1	1	-	31
		CLP TAL cyanide (total)	25	1	1	-	31
		TKN, Ammonia-N, TOC	13	2	2	-	17
		COD, BOD,	6	1	1	-	8
		NO_3, HO_3	11	2	2	-	17
Surface water	pH, temperature specific conductance	CLP TCL volatile organics	17	2	2	1	21
		CLP TCL extractables	17	2	2	1	21
		CLP TCL pesticides/PCBs	17	2	2	1	21
		CLP TAL metals(unfiltered)	17	2	2	-	21
		CLP TAL Cyanide (total	17	2	2	-	21
		COD, BOD	9	1	1	-	11
Surface Soils	Soil gas screening using HNu/OVA	CLP TCL volatile organics	35	4	-	-	39
		CLP TCL extractables	35	4	-	-	39
		CLP TCL pesticides/PCBs	35	4	-	-	39
		CLP TAL metals	35	4	-	-	39
		CLP TAL cyanide	35	4	-	-	39

1. The field quality control samples also include trip blank, which is required for VOA water and air samples. One trip blank, which consists of two 40-ml glass vials for water samples and one blank cartridge for air samples, is shipped with each shipping cooler of VOA samples.

2. Matrix spike/matrix spike duplicate (MS/MSD) is required for organic analysis. Samples designated for MS/MSD analysis will be collected, with extra sample volumes, at a frequency of one per group of 20 or fewer investigative samples. Triple the normal sample volumes will be collected for VOAs, and double the normal sample volumes will be collected for extractable organics, pesticides and PCBs.

3. For inorganic analysis, no extra sample volume is required.

4. The number of samples to be collected for MS/MSD are not included in the matrix total. The number of trip blank samples is also excluded from the matrix total.